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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/034,273
Filing Date: December 28, 2001
Appellant(s): CHATENEVER ET AL.

Wesley W. Whitmyer, Jr.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 24 October 2008 appealing from the Office action mailed 29 May 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2004/0141054	Mochida et al.	7-2004
5,627,583	Nakamura et al.	5-1997
6,750,902	Steinberg et al.	6-2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-4, 6 and 8-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mochida et al. (US 2004/0141054) in view of Nakamura et al. (US 5,627,583).

[claim 1]

Regarding claim 1, Mochida discloses a video imaging system (Figure 1), comprising: a camera head for transmitting image data (Figure 1, Item 3; Paragraph 0136); a camera control unit receiving and processing the image data from the camera head (Figure 1, Item 4; Paragraph 0136), the camera control unit having a detachable configurable component (Figure 1, Items 41-43; Paragraphs 0227-0239; Mochida

discloses an expansion substrate which uses an FPGA to process image data) including a processor (FPGA is a “processor”), wherein the detachable configurable component is completely removable from the camera control unit such that a different detachable configurable component may be installed in the camera control unit (e.g. Paragraph 0028; “disconnected freely”; Paragraphs 0174-0177). Mochida further discloses that the detachable configurable component can be configured according to received information (e.g. Paragraphs 0235-0237) but does not explicitly disclose that the program is stored on a storage device accessible by the camera control unit.

Nakamura discloses a similar video imaging system (Figure 2) including a camera head (Figure 2, Item 1), camera control unit (Figure 2, Item 3) and a reconfigurable processing component (Figure 2, Item 16). Nakamura further discloses that information (i.e. a software program) stored on a storage device accessible to the camera control unit can be used to properly configure the reconfigurable processing component according to the type of camera head connected (e.g. c. 4, ll. 5-57). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the reconfigurable processing components of Mochida in accordance with data stored on a storage device accessible to the camera control unit as taught by Nakamura to perform optimum processing on image data produced by the connected camera head (c. 4, ll. 52-57).

The received program of Mochida in view of Nakamura overwrites the previously stored program on the FPGA (i.e. reprograms the FPGA to perform a different function). The examiner notes that as broadly as claimed, the FPGA processor "configures the

detachable component for processing image data", i.e. the current state of the FPGA determines what operations will be performed on incoming image data. The claim as written does not explicitly state how the processor configures the detachable component, therefore, Mochida in view of Nakamura meets the claim limitations as written.

[claim 2]

Regarding claim 2, Nakamura further discloses that a camera head identifier can be sent to the camera control unit for retrieving the information from the storage device (Figure 6; c. 7, ll. 7-51).

[claim 3]

Regarding claim 3, Nakamura discloses a camera head which transmits the camera head identifier (Figure 6, Item 51, 52; c. 7, ll. 21-34; the examiner notes that since the camera head identifying means is located on the camera head, information must be “transmitted” as claimed to the camera control unit in some manner to inform the camera control unit of the identifier of the connected camera head).

[claim 4]

Regarding claim 4, Nakamura discloses a camera head which includes the storage device (Figure 2, Items 19, 20).

[claim 6]

Regarding claim 6, Nakamura discloses information for programming an FPGA to optimally process image data (c. 4, ll. 5-57). The examiner notes that, as broadly as claimed, this information can be said to “specify” the at least one replaceable

hardware component (e.g. the information provides a specification for the FPGA by which the image information is processed).

[claim 8]

Regarding claim 8, Mochida discloses a replaceable hardware component which further includes a memory device (Figure 28, Item 73).

[claim 9]

Regarding claim 9, Mochida discloses a replaceable hardware component which further includes a field programmable gate array (i.e. FPGA, Figure 28, Item 452; Paragraph 0229).

[claim 10]

Regarding claim 10, Mochida discloses a video bus and the replaceable hardware component attached to the video bus (Figure 1).

[claim 11]

Regarding claim 11, Mochida discloses a replaceable hardware component which includes a connector (Figure 2, Item 35; Paragraph 0145).

[claim 12]

Regarding claim 12, Mochida discloses a connector which receives image data (Paragraphs 0146-0147).

[claim 13]

Regarding claim 13, Mochida discloses a connector which outputs a signal processed from the image data (e.g. Paragraph 0143 discloses outputting to a monitor through D/A convert 36 and encoder 37 while Figure 23 and Paragraphs 0204-0226

disclose enlarging an image using the expansion substrates to display an enlarged image on the monitor, therefore the connect must include an output as claimed to output processed image data).

[claim 14]

Regarding claim 14, Mochida discloses a camera control unit which further comprises hardware capable of processing at least two different types of image data (e.g. Paragraph 0194; image data from CCD sensors of varying sizes can be considered different "types" of image data).

[claim 15]

Regarding claim 15, Mochida discloses information which routes the image data received by the camera control unit to the hardware capable of processing specified type of image data (i.e. by programming the FPGA using the information, the image data is "routed" to a proper section of the FPGA which is capable of providing proper processing).

[claim 16]

Regarding claim 16, Nakamura discloses configuring a reconfigurable hardware component so that the camera control unit is capable of issuing commands to the camera head as claimed (c. 4, ll. 5-57).

[claim 17]

Regarding claim 17, Mochida discloses a video imaging system (Figure 1), comprising: a camera head for transmitting image data (Figure 1, Item 3; Paragraph 0136); a camera control unit receiving and processing the image data from the camera

head (Figure 1, Item 4; Paragraph 0136), the camera control unit having a detachable configurable component (Figure 1, Items 41-43; Paragraphs 0227-0239; Mochida discloses an expansion substrate which uses an FPGA to process image data) including a processor (FPGA is a "processor"), wherein the detachable configurable component is completely removable from the camera control unit such that a different detachable configurable component may be installed in the camera control unit (e.g. Paragraph 0028; "disconnected freely"; Paragraphs 0174-0177). Mochida further discloses that the detachable configurable component can be configured according to received information (e.g. Paragraphs 0235-0237), but does not explicitly disclose that the camera control unit receives the information and configures the component as claimed.

Nakamura discloses a similar video imaging system (Figure 2) including a camera head (Figure 2, Item 1), camera control unit (Figure 2, Item 3) and a reconfigurable processing component (Figure 2, Item 16). Nakamura further discloses that information received by the camera control unit can be used to configure a reconfigurable processing component (e.g. c. 4, ll. 5-57). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the reconfigurable processing components of Mochida in accordance with data stored on a storage device accessible to the camera control unit as taught by Nakamura to perform optimum processing on image data produced by the connected camera head (c. 4, ll. 52-57).

The received program of Mochida in view of Nakamura overwrites the previously stored program on the FPGA (i.e. reprograms the FPGA to perform a different function). The examiner notes that as broadly as claimed, the FPGA processor "configures the detachable component for processing image data", i.e. the current state of the FPGA determines what operations will be performed on incoming image data. The claim as written does not explicitly state how the processor configures the detachable component, therefore, Mochida in view of Nakamura meets the claim limitations as written.

[claim 18]

Regarding claim 18, Nakamura discloses a storage device accessible by the camera control unit (Figure 2, Items 19, 20).

[claim 19]

Regarding claim 19, Nakamura discloses information stored on the storage device (c. 4, ll. 5-57).

[claim 20]

Regarding claim 20, Mochida discloses a connector for outputting a signal processed from the image data (e.g. Figure 1, output of Item 37).

[claim 21]

Regarding claim 21, Mochida discloses a camera control unit which further comprises hardware capable of processing at least two different types of image data (e.g. Paragraph 0194; image data from CCD sensors of varying sizes can be

considered different “types” of image data).

Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steinberg et al. (US 6,750,902).

[claim 22]

Regarding claim 22, Steinberg discloses a video imaging system (Figure 1) comprising a camera head transmitting image data (Figure 1, Item 12); a camera control unit receiving and processing the image data from the camera head (Figure 1, Item 14 or 18; c. 4, l. 48 - c. 5, l. 4); said camera control unit having a detachable configurable component comprising a processor (Figure 1, Item 10; note that the device 10 is at least connected via network link 38; Figure 3, Item 66); a software program (note that the program of Steinberg at least meets the definition provided above; e.g. procedures and data pertaining to the operation of the device) executing on the processor and overwriting an existing program on the processor, the processor configuring the detachable configurable component in the camera control unit to process the image data (c. 4, ll. 26-41; c. 5, ll. 18-30; c. 6, l. 44-48; note that the programming of the processor determines what operations will be applied to incoming image data); wherein the detachable configurable component is completely removable form the camera control unit such that a different detachable configurable component is installable in the camera control unit (Figure 1 and Figure 13; note that multiple different detachable components 220-224 may interface with the camera control unit 226; also note that the detachable component is not disclosed as being permanently connected to the camera

control unit).

[claim 23]

Regarding claim 23, Steinberg discloses obtaining a programming instructions from a storage device (Figure 1, Item 36; c. 4, ll. 26-41). Since the storage device is accessible to the detachable component, and the detachable component communicates with the camera control unit, the storage device must be "accessible" to the camera control unit for at least the reason that data from the storage device could be communicated to the camera control unit via the detachable component.

[claim 24]

Regarding claim 24, Steinberg discloses a program for configuring the processor stored on the storage device (Figure 1, Item 36; c. 4, ll. 26-41).

(10) Response to Argument

With respect to claims 1 and 17, Appellant presents two main arguments, 1) neither Mochida nor Nakamura discloses a detachable configurable component having a processor as claimed and 2) neither Mochida nor Nakamura discloses a software program as claimed.

Claims 1 and 17 are rejected over Mochida in view of Nakamura. Mochida and Nakamura both disclose camera systems including a endoscope type camera head (Mochida, Figure 1, Item 3. Paragraph 0136; Nakamura, Figures 1(a) and 1(b), c. 3, l. 30 - c. 4, l. 4) and a camera control unit (Mochida, Figure 1, Item 4, Paragraph 0136;

Nakamura, Figures 1(a) and 1(b), Item 3, c. 3, l. 46 - c. 4, l. 4). Mochida discloses a camera control unit which includes detachable “expansion substrates" (Figure 1, Items 41-43; Paragraph 0028; “disconnected freely”). Mochida further discloses that the expansion substrates may use an FPGA to realize image processing as part of the expansion substrate so that the expansion substrate can be freely programmable to change an applied image processing facility (Figure 28; Paragraphs 0227-0231). Nakamura discloses a similar camera control unit with a freely programmable FPGA type device for processing data (Figure 2, Item 16; c. 4, ll. 5-8). Nakamura further discloses that the FPGA type device may be programmed on the basis of “circuit data” stored on a storage device (e.g. Figure 2, Item 19, 20) so that processing optimized for a particular attached camera head may be performed by the FPGA device (c. 4, ll. 44-57). It is noted that the FPGA type device 16 of Nakamura is equivalent to the FPGA processor located on the expansion substrate of Mochida, and therefore, it would be obvious to one of ordinary skill in the art to include a storage device storing “circuit data” as described by Nakamura in the device of Mochida so that the device of Mochida may be easily programmed so as to perform optimum processing.

With respect to Appellant’s first argument, Appellant argues that interpreting the FPGA of Mochida as the processor is not consistent with the claim language. Claim 1 as written requires a "detachable configurable component; said detachable configurable component including a processor" and "overwriting an existing software program on said processor, said processor configuring said detachable configurable component for

processing image data". However, it is noted that the claim as written does not explicitly define the structure of the detachable configurable component other than that it must include a processor. Furthermore, the claim as written does not define how the processor configures the detachable configurable component. With respect to Mochida, it is believed that the expansion substrate in its entirety may be considered a "detachable configurable component as claimed" (Figure 1, Items 41-43 and Figure 28, Item 451). The expansion substrate includes an FPGA which processes image data (i.e. a processor). Since the state of the FPGA determines which functions will be applied to the incoming data, it in effect, "configures" the expansion substrate 451 to process image data in a certain manner (note that the data register 73, FPGA 452 and amplifier 58 all cooperate to process the image data). Furthermore, as taught by Nakamura, the FPGA is overwritten with a received program or “programmed” according to received data to apply a desired image processing routine as claimed. Therefore, while Appellant argues that the processor must configure a separate device, the processor and the separate device both being located on the detachable configurable component, the claims do not require the interpretation used by Appellant. Since the FPGA of Mochida processes image data and the expansion substrate is configured by the current state of the FPGA according to received data as taught by Nakamura, it is believed that Mochida in view of Nakamura meets these limitations, as claimed.

Appellant further argues that modifying the device of Mochida to place control device 44 on the expansion substrate cannot be obvious. However, the rejection over Mochida in view of Nakamura does not suggest modifying the device in such a manner. Since the expansion substrate 451 including FPGA 452 meets all limitations as claimed, the modification argued by Appellant is not necessary and therefore the arguments with respect to this modification are considered moot.

With respect to the Appellant's second argument, Appellant argues that the "circuit data" described by Nakamura is not a "software program". In support of this Appellant provides a dictionary definition which reads "written programs or procedures or rules and associated documentation pertaining to the operation of a computer system and that are stored in read/write memory" (Exhibit A). Nakamura discloses an FPGA which is programmed on the basis of received "circuit data". The "circuit data" defines "rules" or "procedures" for selectively connecting switches in the FGPA so that appropriate image processing is performed (i.e. the circuit data programs the FGPA; c. 4, ll. 5-42; the connecting of switches according to provided data may be considered a "procedure" for programming the FPGA). Therefore, while the dictionary definition provided by Appellant is but one possible definition for the term "software program", the circuit data of Nakamura meets at least the "rules" and "procedures" portion of this definition since it defines the manner in which the FGPA device is to be programmed.

Appellant further argues that the "circuit data" is not a software program since Nakamura discloses the use of a "resistor array" which only provides raw data. While the data storage capabilities of a “resistor array” is debatable, it is noted that in the embodiment described by Appellant (Figure 6), the resistor array provides information for identifying the camera head so that appropriate circuit data may be loaded from the ROM 57 (c. 7, ll. 22-43). Therefore, the resistor array is not storing the "circuit data" as argued by Appellant. It is further noted that a memory card may be used to store the "circuit data" of Nakamura (Figure 7; c. 7, ll. 56-65).

With respect to claim 22, Appellant argues that Steinberg does not disclose a detachable configurable component installable in a camera control unit. It is first pointed out that the rejection of claims 22-24 was made under 35 USC §103(a) due to a clerical error and the rejection should have been made under 35 USC §102(e).

Specifically, Appellant argues that Steinberg fails to disclose or a teach a camera control unit removable from and installed in a camera control unit as claimed in claim 22. Appellant further argues that the claimed system requires each and every element to function, and would not function in a state where one or more items is not present. First, it is noted that Steinberg teaches a removable configurable component (Figure 1, Item 10) which is plugged into a camera control unit (Figure 1, Item 14). The configurable component is programmed using the camera control unit to send commands and process image data (c. 4, l. 26 - c. 5, l. 4). The configurable component

is installable in and removable from the camera control unit (i.e. device 10 may be freely connected to or disconnected to camera control unit 14). Since the claims as written do not define how the installation and removal are to be performed, and do not explicitly define the relationship between detachable configurable component and the camera control unit when the detachable configurable component is in the installed state (i.e. the claims do not require a single housing in which both items are contained, nor do the claims require that the detachable configurable component be physically located completely inside the camera control unit), the structure described by Steinberg is believed to meet the limitations of claim 22 as written. It is further noted that while Appellant argues that all devices must be present for the device to function, this limitation is also not found in the claims as written.

Finally, Appellant argues that the detachable configurable component 10 of Steinberg cannot be simultaneously connected to both the camera control unit and the camera through port 20. While this may be true, it is noted that Steinberg describes a second communication link for communicating between the camera 12 and the detachable configurable component 10 (Figure 1, Item 44). The detachable configurable component may be simultaneously connected to the camera using link 44 and the camera control unit using link 26. It is further noted that the claim as written does not require simultaneous connection or communication as argued. Although the claims are interpreted in light of the specification, limitations from the specification are

not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Therefore, since Mochida, Nakamura and Steinberg disclose all limitations as claimed, and Appellant's arguments rely on features which are not recited in the claims, the rejections based on Mochida, Nakamura and Steinberg should be sustained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Timothy J Henn/

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